

# Search Notes

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
1	BRS	L1	33	soluble adj1 hardness	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 11:46	
2	BRS	L2	5	1 and fluoresc\$	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:01	
3	BRS	L3	28	1 not 2	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:05	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>1</b>		<b>0</b>
<b>2</b>		<b>0</b>
<b>3</b>		<b>0</b>

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
4	BRS	L4	92090	hardness and water	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:05	
5	BRS	L5	4045	4 and indicator	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:06	
6	BRS	L6	7082	4 and (colorim\$ or luminesc\$ or fluoresc\$)	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:06	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>4</b>		<b>0</b>
<b>5</b>		<b>0</b>
<b>6</b>		<b>0</b>

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
7	BRS	L7	292	6 and hardness.ti,ab.	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/13 12:06	
8	BRS	L8	234	7 and fluoresc\$	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/13 12:07	
9	BRS	L9	1556	6 and water near3 hardness	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/13 12:07	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>7</b>		<b>0</b>
<b>8</b>		<b>0</b>
<b>9</b>		<b>0</b>

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
10	BRS	L10	86	9 and 7	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:07	
11	BRS	L11	59	10 and 8	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:12	
12	BRS	L12	5263	(hardness and water).ti,ab,clm. and (calcium or magnesium or ca or mg)	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:13	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>10</b>		<b>0</b>
<b>11</b>		<b>0</b>
<b>12</b>		<b>0</b>



	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
13	BRS	L13	187	12 and fluoresc\$	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:20	
14	BRS	L14	407	436/79.ccls.	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:20	
15	BRS	L15	139	14 and soluble	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:21	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>13</b>		<b>0</b>
<b>14</b>		<b>0</b>
<b>15</b>		<b>0</b>

	Type	L #	Hits	Search Text	DBs	Time Stamp	Comments
16	BRS	L16	109	14 and fluoresc\$	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:21	
17	BRS	L17	55	15 and 16	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:21	
18	BRS	L18	6	17 and hardness	USP AT; US-P GPU B; EPO; JPO; DER WEN T; IBM_ TDB	2004/06/1 3 12:21	

	<b>Error Definition</b>	<b>Er ro rs</b>
<b>16</b>		<b>0</b>
<b>17</b>		<b>0</b>
<b>18</b>		<b>0</b>

# Search Notes

FILE 'CAPLUS' ENTERED AT 12:30:36 ON 13 JUN 2004  
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FILE COVERS 1907 - 13 Jun 2004 VOL 140 ISS 25  
FILE LAST UPDATED: 11 Jun 2004 (20040611/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> s 2092-55-9 or 3147-14-6 or 3564-14-5 or 1058-92-0  
REG1stRY INITIATED  
Substance data SEARCH and crossover from CAS REGISTRY in progress...  
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L2      184 L1

REG1stRY INITIATED  
Substance data SEARCH and crossover from CAS REGISTRY in progress...  
Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L4      98 L3

REGISTRY INITIATED

Substance data SEARCH and crossover from CAS REGISTRY in progress...

Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L6 144 L5

REGISTRY INITIATED

Substance data SEARCH and crossover from CAS REGISTRY in progress...

Use DISPLAY HITSTR (or FHITSTR) to directly view retrieved structures.

L8 158 L7

L9 534 L8 OR L6 OR L4 OR L2

=> s 19 and hardness

170285 HARDNESS

L10 13 L9 AND HARDNESS

=> d 110 1-13

L10 ANSWER 1 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:601192 CAPLUS

DN 139:341302

TI Adsorption-Bonded Azo Reagents in Chemical Tests Based on the Principles  
of Precipitation Paper Chromatography

AU Amelin, V. G.; Tret'yakov, A. V.

CS Department of Chemistry and Ecology, Vladimir State University, Vladimir,

600000, Russia  
SO Journal of Analytical Chemistry (Translation of Zhurnal Analiticheskoi  
Khimii) (2003), 58(8), 740-747  
CODEN: JACTE2; ISSN: 1061-9348  
PB MAIK Nauka/Interperiodica Publishing  
DT Journal  
LA English  
RE.CNT 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS  
RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 2 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:511977 CAPLUS  
DN 139:57599  
TI Method to ascertain whether soluble hardness is calcium or magnesium based  
IN Dang, Xiaojun; Grattan, David A.; Link, Linda M.  
PA USA  
SO U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. Ser. No. 33,756.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2003124731	A1	20030703	US 2002-209347	20020731
US 2003124730	A1	20030703	US 2001-33756	20011228
WO 2003058218	A1	20030717	WO 2002-US40380	20021218
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US 2001-33756	A2	20011228		
US 2002-209347	A	20020731		

L10 ANSWER 3 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:511976 CAPLUS  
DN 139:57598  
TI Fluorometric monitoring and control of soluble hardness of water used in

industrial water systems  
IN Bailey, Bruce A.; Dang, Xiaojun; Grattan, David A.; Link, Linda  
PA USA  
SO U.S. Pat. Appl. Publ., 14 pp.  
CODEN: USXXCO  
DT Patent  
LA English  
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2003124730	A1	20030703	US 2001-33756	20011228
US 2003124731	A1	20030703	US 2002-209347	20020731
WO 2003058218	A1	20030717	WO 2002-US40380	20021218
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US 2001-33756	A2	20011228		
US 2002-209347	A	20020731		

L10 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:814436 CAPLUS  
DN 137:303933  
TI Indicator for calcium and magnesium  
IN McKechnie, Malcolm Tom; Cornelius, Gay Joyce; Coke, Mark  
PA Reckitt Benckiser (UK) Limited, UK  
SO PCT Int. Appl., 20 pp.  
CODEN: PIXXD2  
DT Patent  
LA English  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002084278	A1	20021024	WO 2002-GB1515	20020409
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,				



UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,  
 TJ, TM  
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,  
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,  
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
 GB 2374411 A1 20021016 GB 2001-8926 20010410  
 EP 1377824 A1 20040107 EP 2002-722409 20020409  
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
 PRAI GB 2001-8926 A 20010410  
 WO 2002-GB1515 W 20020409  
 RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS  
 RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:414583 CAPLUS  
 DN 135:24329  
 TI Indicators for determination of hardness  
 IN Nakajima, Junichi; Mizogami, Keita; Ukiana, Yuji  
 PA Miura Kogyo K. K., Japan; Miura Kenkyusho K. K.  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2001153858	A2	20010608	JP 1999-333568	19991125
JP 2001201497	A2	20010727	JP 2000-356925	19991125
US 6599748	B1	20030729	US 2000-716434	20001121
CN 1298097	A	20010606	CN 2000-137041	20001125
PRAI JP 1999-333568	A3	19991125		

L10 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:365051 CAPLUS  
 DN 132:352369  
 TI Test method for the determination of overall quality characteristics of  
 water using indicator papers  
 AU Amelin, V. G.  
 CS Department of Chemistry and Ecology, Vladimir State University, Vladimir,  
 600026, Russia  
 SO Journal of Analytical Chemistry (Translation of Zhurnal Analiticheskoi  
 Khimii) (2000), 55(5), 480-485

CODEN: JACTE2; ISSN: 1061-9348  
PB MAIK Nauka/Interperiodica Publishing  
DT Journal  
LA English  
RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS  
RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 7 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1996:591244 CAPLUS  
DN 125:251010  
TI Binding of calcium ions to a-sulfonated fatty acid methyl esters in  
washing conditions  
AU Satsuki, Teruhisa; Yoshimura, Haruo; Nagoh, Yumiko  
CS Fabric-care Research Laboratories, Lion corporation, Tokyo, 132, Japan  
SO World Surfactants Congress, 4th, Barcelona, June 3-7, 1996 (1996), Volume  
2, 159-168 Publisher: Asociacion Espanola de Productores de Sustancias  
para Aplicaciones Tensioactivas, Barcelona, Spain.  
CODEN: 63KCAH  
DT Conference  
LA English

L10 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:719503 CAPLUS  
DN 123:92743  
TI Colorimetric method and instrument for rapidly measuring hardness of  
boiler water  
IN Zhang, Ji; Chen, Jinsheng  
PA Tianjin Boiler Pressure Container Institute, Peop. Rep. China  
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11 pp.  
CODEN: CNXXEV  
DT Patent  
LA Chinese  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 1087723	A	19940608	CN 1993-105857	19930527
PRAI CN 1993-105857		19930527		

L10 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:172935 CAPLUS  
DN 120:172935  
TI Flow injection determination of total water hardness in seawater by

using metal-ligand buffer and color-indicator  
AU Imato, Toshihiko; Saitoh, Ko; Kawabata, Yuji; Ishibashi, Nobuhiko  
CS Fac. Eng., Kyushu Univ., Fukuoka, Japan  
SO Symposium on Salt, [Proceedings] (1993), 7th(Vol. 2), 563-8  
CODEN: SSAPDY; ISSN: 0277-4267  
DT Journal  
LA English

L10 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1990:68787 CAPLUS  
DN 112:68787  
TI Indicators for estimation of hardness in brine used in membrane-type  
chlor-alkali cells  
AU Venkataraman, K.; Rajan, T. Sushil Kumar; Gurumoorthy, K.  
CS Mettur Chem. Ind. Corp. Ltd., Mettur Dam, 636 402, India  
SO Indian Journal of Technology (1988), 26(11), 565-6  
CODEN: IJOTA8; ISSN: 0019-5669  
DT Journal  
LA English

L10 ANSWER 11 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1982:100520 CAPLUS  
DN 96:100520  
TI Test kit for field analysis of plant tissue magnesium and calcium  
IN Sardisco, John B.; Phillips, Carroll O.  
PA Pennzoil Co., USA  
SO U.S., 6 pp.  
CODEN: USXXAM  
DT Patent  
LA English  
FAN.CNT 1

	PATENT NO.		KIND	DATE	APPLICATION NO.	DATE
	-----			-----		
PI	US 4303610	A	1981	1201	US 1980-150710	19800519
PRAI	US 1980-150710			19800519		

L10 ANSWER 12 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1976:21955 CAPLUS  
DN 84:21955  
TI Photometric test method for chelant residual of deficiency  
IN Bockowski, Edmund J.; Stefanelli, Louis J.  
PA Betz Laboratories, Inc., USA  
SO U.S., 4 pp.

CODEN: USXXAM

DT Patent

LA English

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 3895913	A	19750722	US 1974-503895	19740906
PRAI US 1974-503895		19740906		

L10 ANSWER 13 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1960:73303 CAPLUS

DN 54:73303

OREF 54:13940g-i,13941a

TI New trilonometric indicator of the Chromium-Dark Blue type

AU Mustafin, I. S.; Kashkovskaya, E. A.; Ivanova, A. N.

CS N. G. Chernyshevskii State Univ., Saratov

SO Zavodskaya Laboratoriya (1958), 24, 1060-1

CODEN: ZVDLAU; ISSN: 0321-4265

DT Journal

LA Unavailable

=> d 110 4-6, 8-10 ti,ab

L10 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Indicator for calcium and magnesium

AB The application relates to a compn. for detecting Calcium or Magnesium ions (i.e. water hardness) comprising a metal indicator dye selected from the group of Alizarin Red, Eriochrome Black, Calmagite, or Murexide, the indicator dye being impregnated in a sheet of a fibrous material.

L10 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Indicators for determination of hardness

AB The title indicators are composed of metal indicators(e.g., calmagite, EBT) and desensitizers, e.g., org. polybasic acids having <sup>32</sup> carboxylic groups(e.g., Na polyacrylate).

L10 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Test method for the determination of overall quality characteristics of water using indicator papers

AB Test systems were proposed for the detn. of total hardness, acidity, alky., pH, total concn. of heavy metals, and active chlorine in natural,

industrial, and potable water by the length of the colored zone and color intensity of indicator papers or the test liq. after placing reactive papers in it. The ranges of the parameters to be detd. were as follows: 0.001-30mM for total hardness, 0-5mM for total acidity, 0-30mM for total alky.,  $5 \times 10^{-8}$ - $5 \times 10^{-4}$ M for the total concns. of heavy metals, and 0.3-500 mg/L for active chlorine. The time of anal. was 10-15 min; the relative std. deviation of the results of anal. was no higher than 30%.

L10 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Colorimetric method and instrument for rapidly measuring hardness of boiler water

AB The hardness is measured by using a coloring agent and a std. color scale by preheating a colorimetric light source, injecting a water sample (usually 5 mL) into a sealed coloring agent container and turning the container several time for mixing, pouring the mixt. in a colorimetric cup and setting the cup at an appropriate position with respect to the light source, and detg. the hardness by comparing with the std. color scale. The coloring agent consists 30-80% of a pH buffer soln. (sodium tetraborate,  $\text{NaH}_2\text{PO}_4$ ,  $\text{Na}_2\text{HPO}_4$ , and Tris) and 20-70% metal ion indicator (Chrome blue black, Chrome blue K, or Calmagite), and the std. color scale is prepd. from mixts. contg. 10-90% Co salt and 10-90% Cu salt equal to 0.00, 0.01, 0.02, 0.03, 0.04, 0.05 mequiv/L. The instrument includes a colorimetric light source lamp, lamp box, std. color bottle and colorimetric cup.

L10 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Flow injection determination of total water hardness in seawater by using metal-ligand buffer and color-indicator

AB Flow injection detn. of total water hardness (sum of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ion concns.) is proposed, using the reaction of the sample with a metal-ligand buffer soln. contg. calmagite as an indicator. Seawater injected into a stream of water was merged with a stream of 0.01 M EDTA soln. (pH 9.5); the mixed stream was merged with a Mg-nitrilotriacetic acid buffer soln. contg. calmagite. The absorbance change of the calmagite-Mg complex at 535 nm was monitored. Approx. 60 samples/h can be detd. by the proposed method. Anal. results obtained were in good agreement with those from the conventional chelatometric titrn. method.

L10 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

TI Indicators for estimation of hardness in brine used in membrane-type chlor-alkali cells

AB Three indicators are suggested for use in the quality control of chem.

purified brine and ion-exchange treated brine used in membranc-type electrolyzers. The methods are simple enough to be adopted on a routine basis and the results reliable. The detection limits of the three indicators were detd. Calmagite and Patton and Reeder's indicator are suitable for quality control of chem. purified brine. Acid Aliyarin Black can be used for quality control of brine after ion-exchange treatment.

=> s l10 and fluoresc?

385284 FLUORESC?

L11 2 L10 AND FLUORESC?

=> d 1 2

L11 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:511977 CAPLUS

DN 139:57599

TI Method to ascertain whether soluble hardness is calcium or magnesium based

IN Dang, Xiaojun; Grattan, David A.; Link, Linda M.

PA USA

SO U.S. Pat. Appl. Publ., 22 pp., Cont.-in-part of U.S. Ser. No. 33,756.

CODEN: USXXCO

DT Patent

LA English

FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2003124731	A1	20030703	US 2002-209347	20020731
US 2003124730	A1	20030703	US 2001-33756	20011228
WO 2003058218	A1	20030717	WO 2002-US40380	20021218
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US 2001-33756	A2	20011228		
US 2002-209347	A	20020731		

L11 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2003:511976 CAPLUS  
 DN 139:57598  
 TI Fluorometric monitoring and control of soluble hardness of water used in industrial water systems  
 IN Bailey, Bruce A.; Dang, Xiaojun; Grattan, David A.; Link, Linda  
 PA USA  
 SO U.S. Pat. Appl. Publ., 14 pp.  
 CODEN: USXXCO  
 DT Patent  
 LA English  
 FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
PI US 2003124730	A1	20030703	US 2001-33756	20011228
US 2003124731	A1	20030703	US 2002-209347	20020731
WO 2003058218	A1	20030717	WO 2002-US40380	20021218
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
PRAI US 2001-33756	A2	20011228		
US 2002-209347	A	20020731		

=> d 110 4-6, 8-10

L10 ANSWER 4 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2002:814436 CAPLUS  
 DN 137:303933  
 TI Indicator for calcium and magnesium  
 IN McKechnie, Malcolm Tom; Cornelius, Gay Joyce; Coke, Mark  
 PA Reckitt Benckiser (UK) Limited, UK  
 SO PCT Int. Appl., 20 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI WO 2002084278 A1 20021024 WO 2002-GB1515 20020409  
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,  
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,  
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU,  
TJ, TM  
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,  
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,  
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG  
GB 2374411 A1 20021016 GB 2001-8926 20010410  
EP 1377824 A1 20040107 EP 2002-722409 20020409  
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,  
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR  
PRAI GB 2001-8926 A 20010410  
WO 2002-GB1515 W 20020409  
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS  
RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 5 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2001:414583 CAPLUS  
DN 135:24329  
TI Indicators for determination of hardness  
IN Nakajima, Junichi; Mizogami, Keita; Ukiana, Yuji  
PA Miura Kogyo K. K., Japan; Miura Kenkyusho K. K.  
SO Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI JP 2001153858	A2	20010608	JP 1999-333568	19991125
JP 2001201497	A2	20010727	JP 2000-356925	19991125
US 6599748	B1	20030729	US 2000-716434	20001121
CN 1298097	A	20010606	CN 2000-137041	20001125
PRAI JP 1999-333568	A3	19991125		

L10 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:365051 CAPLUS  
DN 132:352369  
TI Test method for the determination of overall quality characteristics of



water using indicator papers

AU Amelin, V. G.

CS Department of Chemistry and Ecology, Vladimir State University, Vladimir,  
600026, Russia

SO Journal of Analytical Chemistry (Translation of Zhurnal Analiticheskoi  
Khimii) (2000), 55(5), 480-485

CODEN: JACTE2; ISSN: 1061-9348

PB MAIK Nauka/Interperiodica Publishing

DT Journal

LA English

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS  
RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L10 ANSWER 8 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1995:719503 CAPLUS

DN 123:92743

TI Colorimetric method and instrument for rapidly measuring hardness of  
boiler water

IN Zhang, Ji; Chen, Jinsheng

PA Tianjin Boiler Pressure Container Institute, Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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PI CN 1087723	A	19940608	CN 1993-105857	19930527
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PRAI CN 1993-105857		19930527		
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L10 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:172935 CAPLUS

DN 120:172935

TI Flow injection determination of total water hardness in seawater by  
using metal-ligand buffer and color-indicator

AU Imato, Toshihiko; Saitoh, Ko; Kawabata, Yuji; Ishibashi, Nobuhiko

CS Fac. Eng., Kyushu Univ., Fukuoka, Japan

SO Symposium on Salt, [Proceedings] (1993), 7th(Vol. 2), 563-8

CODEN: SSAPDY; ISSN: 0277-4267

DT Journal

LA English

L10 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1990:68787 CAPLUS  
DN 112:68787  
TI Indicators for estimation of hardness in brine used in membrane-type  
chlor-alkali cells  
AU Venkataraman, K.; Rajan, T. Sushil Kumar; Gurumoorthy, K.  
CS Mettur Chem. Ind. Corp. Ltd., Mettur Dam, 636 402, India  
SO Indian Journal of Technology (1988), 26(11), 565-6  
CODEN: IJOTA8; ISSN: 0019-5669  
DT Journal  
LA English

=> d 110 10 full

'FULL' IS NOT A VALID FORMAT FOR FILE 'CAPLUS'

The following are valid formats:

ABS ----- GI and AB  
ALL ----- BIB, AB, IND, RE  
APPS ----- AI, PRAI  
BIB ----- AN, plus Bibliographic Data and PI table (default)  
CAN ----- List of CA abstract numbers without answer numbers  
CBIB ----- AN, plus Compressed Bibliographic Data  
DALL ----- ALL, delimited (end of each field identified)  
DMAX ----- MAX, delimited for post-processing  
FAM ----- AN, PI and PRAI in table, plus Patent Family data  
FBIB ----- AN, BIB, plus Patent FAM  
IND ----- Indexing data  
IPC ----- International Patent Classifications  
MAX ----- ALL, plus Patent FAM, RE  
PATS ----- PI, SO  
SAM ----- CC, SX, TI, ST, IT  
SCAN ----- CC, SX, TI, ST, IT (random display, no answer numbers;  
SCAN must be entered on the same line as the DISPLAY,  
e.g., D SCAN or DISPLAY SCAN)  
STD ----- BIB, IPC, and NCL  
  
IABS ----- ABS, indented with text labels  
IALL ----- ALL, indented with text labels  
IBIB ----- BIB, indented with text labels  
IMAX ----- MAX, indented with text labels  
ISTD ----- STD, indented with text labels  
  
OBIB ----- AN, plus Bibliographic Data (original)  
OIBIB ----- OBIB, indented with text labels

SBIB ----- BIB, no citations  
SIBIB ----- IBIB, no citations

HIT ----- Fields containing hit terms  
HITIND ----- IC, ICA, ICI, NCL, CC and index field (ST and IT)  
                  containing hit terms  
HITRN ----- HIT RN and its text modification  
HITSTR ----- HIT RN, its text modification, its CA index name, and  
                  its structure diagram  
HITSEQ ----- HIT RN, its text modification, its CA index name, its  
                  structure diagram, plus NTE and SEQ fields  
FHITSTR ----- First HIT RN, its text modification, its CA index name, and  
                  its structure diagram  
FHITSEQ ----- First HIT RN, its text modification, its CA index name, its  
                  structure diagram, plus NTE and SEQ fields  
KWIC ----- Hit term plus 20 words on either side  
OCC ----- Number of occurrence of hit term and field in which it occurs

To display a particular field or fields, enter the display field codes. For a list of the display field codes, enter HELP DFIELDS at an arrow prompt (=>). Examples of formats include: TI; TI,AU; BIB,ST; TI,IND; TI,SO. You may specify the format fields in any order and the information will be displayed in the same order as the format specification.

All of the formats (except for SAM, SCAN, HIT, HITIND, HITRN, HITSTR, FHITSTR, HITSEQ, FHITSEQ, KWIC, and OCC) may be used with DISPLAY ACC to view a specified Accession Number.  
ENTER DISPLAY FORMAT (BIB):all

L10 ANSWER 10 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1990:68787 CAPLUS  
DN 112:68787  
ED Entered STN: 17 Feb 1990  
TI Indicators for estimation of hardness in brine used in membrane-type  
chlor-alkali cells  
AU Venkataraman, K.; Rajan, T. Sushil Kumar; Gurumoorthy, K.  
CS Mettur Chem. Ind. Corp. Ltd., Mettur Dam, 636 402, India  
SO Indian Journal of Technology (1988), 26(11), 565-6  
CODEN: IJOTA8; ISSN: 0019-5669  
DT Journal  
LA English  
CC 79-3 (Inorganic Analytical Chemistry)  
AB Three indicators are suggested for use in the quality control of chem.

- purified brine and ion-exchange treated brine used in membrane-type electrolyzers. The methods are simple enough to be adopted on a routine basis and the results reliable. The detection limits of the three indicators were detd. Calmagite and Patton and Reeder's indicator are suitable for quality control of chem. purified brine. Acid Aliyarin Black can be used for quality control of brine after ion-exchange treatment.
- ST brine analysis hardness metallochromic indicator; hardness detn brine metallochromic indicator; calmagite indicator hardness detn brine; Patton Reeder indicator hardness detn brine; acid Aliyarin Black indicator hardness detn
- IT Brines  
(hardness detn. in, for membrane chlor-alkali cells, metallochromic indicators for)
- IT Electrolytic cells  
(diaphragm, chlor-alkali, metallochromic indicators for hardness detn. in brine for)
- IT Indicators  
(metallochromic, for hardness detn. in brine in membrane chlor-alkali cells)
- IT 7439-95-4, Magnesium, analysis 7440-70-2, Calcium, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(detn. of, in brine in membrane chlor-alkali cells, metallochromic indicators for)
- IT 3147-14-6, Calmagite 3258-74-0 3737-95-9, Patton and Reeder's indicator  
RL: ANST (Analytical study)  
(metallochromic indicator, in detn. of hardness in brine in membrane chlor-alkali cells)

=> d 110 9 all

L10 ANSWER 9 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 1994:172935 CAPLUS

DN 120:172935

ED Entered STN: 02 Apr 1994

TI Flow injection determination of total water hardness in seawater by using metal-ligand buffer and color-indicator

AU Imato, Toshihiko; Saitoh, Ko; Kawabata, Yuji; Ishibashi, Nobuhiko

CS Fac. Eng., Kyushu Univ., Fukuoka, Japan

SO Symposium on Salt, [Proceedings] (1993), 7th(Vol. 2), 563-8

CODEN: SSAPDY; ISSN: 0277-4267

DT Journal

LA English

CC 61-3 (Water)

Section cross-reference(s): 79

- AB Flow injection detn. of total water hardness (sum of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ion concns.) is proposed, using the reaction of the sample with a metal-ligand buffer soln. contg. calmagite as an indicator. Seawater injected into a stream of water was merged with a stream of 0.01 M EDTA soln. (pH 9.5); the mixed stream was merged with a Mg-nitrilotriacetic acid buffer soln. contg. calmagite. The absorbance change of the calmagite-Mg complex at 535 nm was monitored. Approx. 60 samples/h can be detd. by the proposed method. Anal. results obtained were in good agreement with those from the conventional chelatometric titrn. method.
- ST flow injection hardness detn seawater; metal ligand buffer color indicator analysis; EDTA magnesium nitrilotriacetic acid buffer analysis; calmagite color indicator seawater hardness detn
- IT 139-13-9D, Nitrilotriacetic acid, magnesium complex with  
RL: ANST (Analytical study)  
(buffer soln. of EDTA and, for detn. of hardness in seawater by flow injection with calmagite color indicator)
- IT 60-00-4, EDTA, uses  
RL: USES (Uses)  
(buffer soln. of magnesium nitrilotriacetic acid and, for detn. of hardness in seawater by flow injection with calmagite color indicator)
- IT 3147-14-6, Calmagite  
RL: ANST (Analytical study)  
(color indicator, for detn. of hardness in seawater by flow injection with EDTA-magnesium nitrilotriacetic acid buffer soln.)
- IT 7439-95-4, Magnesium, analysis  
RL: ANST (Analytical study)  
(detn. of hardness as calcium and, in seawater, by flow injection with EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator)
- IT 7440-70-2, Calcium, analysis  
RL: ANST (Analytical study)  
(detn. of hardness as magnesium and, in seawater, by flow injection with EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator)
- IT 7732-18-5, Water, analysis  
RL: ANST (Analytical study)  
(hardness as calcium and magnesium detn. in sea-, by flow injection with EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator)

=> d 110 8 all

AN 1995:719503 CAPLUS  
DN 123:92743  
ED Entered STN: 04 Aug 1995  
TI Colorimetric method and instrument for rapidly measuring hardness of  
boiler water  
IN Zhang, Ji; Chen, Jinsheng  
PA Tianjin Boiler Pressure Container Institute, Peop. Rep. China  
SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 11 pp.  
CODEN: CNXXEV  
DT Patent  
LA Chinese  
IC ICM G01N031-22  
ICS G01N021-77  
CC 61-3 (Water)  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI CN 1087723	A	19940608	CN 1993-105857	19930527
PRAI CN 1993-105857		19930527		

AB The hardness is measured by using a coloring agent and a std. color scale by preheating a colorimetric light source, injecting a water sample (usually 5 mL) into a sealed coloring agent container and turning the container several time for mixing, pouring the mixt. in a colorimetric cup and setting the cup at an appropriate position with respect to the light source, and detg. the hardness by comparing with the std. color scale. The coloring agent consists 30-80% of a pH buffer soln. (sodium tetraborate,  $\text{NaH}_2\text{PO}_4$ ,  $\text{Na}_2\text{HPO}_4$ , and Tris) and 20-70% metal ion indicator (Chrome blue black, Chrome blue K, or Calmagite), and the std. color scale is prepd. from mixts. contg. 10-90% Co salt and 10-90% Cu salt equal to 0.00, 0.01, 0.02, 0.03, 0.04, 0.05 mequiv/L. The instrument includes a colorimetric light source lamp, lamp box, std. color bottle and colorimetric cup.

ST colorimetric boiler water hardness detn

IT Colorimetry  
(colorimetric method and instrument for rapidly measuring hardness of boiler water)

IT 77-86-1, Tris (buffer) 1330-43-4, Sodium tetraborate 2538-85-4, Chrome blue black 3147-14-6, Calmagite 3270-25-5 7558-79-4, Disodium hydrogen phosphate 7558-80-7, Sodium dihydrogen phosphate  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(buffer soln. for colorimetric detn. of hardness of boiler water)

IT 7732-18-5, Water, analysis  
RL: AMX (Analytical matrix); ANST (Analytical study)  
(colorimetric method and instrument for rapidly measuring

hardness of boiler water)  
IT 7439-95-4, Magnesium, analysis 7440-70-2, Calcium, analysis  
RL: ANT (Analyte); ANST (Analytical study)  
(colorimetric method and instrument for rapidly measuring  
hardness of boiler water)  
IT 7440-48-4D, Cobalt, compds., slats 7440-50-8D, Copper, compds., slats  
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
(std. color solns. for colorimetric detn. of hardness of  
boiler water)

=> d 110 6 all

L10 ANSWER 6 OF 13 CAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:365051 CAPLUS  
DN 132:352369  
ED Entered STN: 01 Jun 2000  
TI Test method for the determination of overall quality characteristics of  
water using indicator papers  
AU Amelin, V. G.  
CS Department of Chemistry and Ecology, Vladimir State University, Vladimir,  
600026, Russia  
SO Journal of Analytical Chemistry (Translation of Zhurnal Analiticheskoi  
Khimii) (2000), 55(5), 480-485  
CODEN: JACTE2; ISSN: 1061-9348  
PB MAIK Nauka/Interperiodica Publishing  
DT Journal  
LA English  
CC 61-3 (Water)  
Section cross-reference(s): 79  
AB Test systems were proposed for the detn. of total hardness, acidity,  
alky., pH, total concn. of heavy metals, and active chlorine in natural,  
industrial, and potable water by the length of the colored zone and color  
intensity of indicator papers or the test liq. after placing reactive  
papers in it. The ranges of the parameters to be detd. were as follows:  
0.001-30mM for total hardness, 0-5mM for total acidity, 0-30mM for total  
alky.,  $5 \times 10^{-8}$ - $5 \times 10^{-4}$ M for the total concns. of heavy  
metals, and 0.3-500 mg/L for active chlorine. The time of anal. was 10-15  
min; the relative std. deviation of the results of anal. was no higher  
than 30%.  
ST indicator paper water quality detn  
IT Alkalinity  
(detn. of; indicator papers for detn. of overall quality  
characteristics of natural, industrial, and potable waters)  
IT Heavy metals

RL: ANT (Analyte); ANST (Analytical study)  
 (detn. of; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

IT Drinking waters  
 Waters  
 (indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

IT Paper  
 (indicator; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

IT 7782-50-5, Chlorine, analysis  
 RL: ANT (Analyte); ANST (Analytical study)  
 (active, detn. of; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

IT 60-10-6 76-59-5 76-61-9 85-85-8 115-39-9 119-93-7 143-74-8  
 1058-92-0 1787-61-7 2538-85-4 7681-11-0, Potassium iodide (KI), uses 9005-25-8, Starch, uses  
 RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)  
 (anal. reagent; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

IT 7732-18-5, Water, analysis  
 RL: AMX (Analytical matrix); ANST (Analytical study)  
 (indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters)

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Amelin, V; Zh Anal Khim 1998, V53(9), P958
- (2) Anon; Process Eng (Austral) 1993, 8, P20
- (3) Anon; Test Kits Aquamerck, Aquaquant, Microquant for Mobile Analyse 1994
- (4) Anon; Unified Methods for Water Analysis 1973
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- (6) Clifford, H; US 3510263 1970 CAPLUS
- (7) Halamex, E; CZ 239708 1987
- (8) Halamex, E; CZ 239710 1988
- (9) Lur'e, Y; Analiticheskaya khimiya promyshlennykh stochnykh vod 1984
- (10) Lur'e, Y; Analytical Chemistry of Industrial Waste Waters 1984
- (11) Ostrovskaya, V; Reactive Indicator Kits for Multielement Water Testing 1992
- (12) Ostrovskaya, V; Reaktivnye indikatornye sredstva dlya mnogoelementnogo testirovaniya vody 1992
- (13) Ostrovskaya, V; Zh Anal Khim 1987, V42(9), P716
- (14) Pantaler, R; Zh Anal Khim 1996, V51(5), P521
- (15) Pantaler, R; Zh Anal Khim 1997, V52(6), P643
- (16) Roman, L; PR 89539 1986
- (17) Rupe, C; US 4092115 1978 CAPLUS



- (18) Sandorne, E; HU 170775 1978
- (19) Schmitt, D; US 3843325 1974 CAPLUS
- (20) Siepak, J; PL 141087 1987
- (21) Siepak, J; PL 141088 1987

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Search Strategy  
(CAN)(120:172935)

\* 120:172935

Flow injection determination of total water hardness in seawater by using metal-ligand buffer and color-indicator.

Imato, Toshihiko; Saitoh, Ko; Kawabata, Yuji; Ishibashi, Nobuhiko (Fac. Eng., Kyushu Univ., Fukuoka, Japan). Symp. Salt, [Proc.], 7th(Vol. 2), 563-8 (English) 1993. CODEN: SSAPDY. ISSN: 0277-4267. DOCUMENT TYPE: Journal CA Section: 61 (Water) Section cross-reference(s): 79

Flow injection detn. of total water hardness (sum of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  ion concns.) is proposed, using the reaction of the sample with a metal-ligand buffer soln. contg. calmagite as an indicator. Seawater injected into a stream of water was merged with a stream of 0.01 M EDTA soln. (pH 9.5); the mixed stream was merged with a Mg-nitrilotriacetic acid buffer soln. contg. calmagite. The absorbance change of the calmagite-Mg complex at 535 nm was monitored. Approx. 60 samples/h can be detd. by the proposed method. Anal. results obtained were in good agreement with those from the conventional chelatometric titrn. method.

\*

#### Keywords

flow injection hardness detn seawater  
metal ligand buffer color indicator analysis  
EDTA magnesium nitrilotriacetic acid buffer analysis  
calmagite color indicator seawater hardness detn

#### Index Entries

139-13-9, magnesium complex with  
buffer soln. of EDTA and, for detn. of hardness in seawater by flow injection  
with calmagite color indicator

60-00-4, uses  
buffer soln. of magnesium nitrilotriacetic acid and, for detn. of hardness in  
seawater by flow injection with calmagite color indicator

3147-14-6  
color indicator, for detn. of hardness in seawater by flow injection with  
EDTA-magnesium nitrilotriacetic acid buffer soln.

7439-95-4, analysis  
detn. of hardness as calcium and, in seawater, by flow injection with  
EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator

7440-70-2, analysis  
detn. of hardness as magnesium and, in seawater, by flow injection with  
EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator

7732-18-5, analysis  
hardness as calcium and magnesium detn. in sea-, by flow injection with  
EDTA-magnesium nitrilotriacetic acid buffer soln. and calmagite color indicator

\*

Search Strategy  
(CAN)(132:352369)

132:352369

Test method for the determination of overall quality characteristics of water using indicator papers.

Amelin, V. G. (Department of Chemistry and Ecology, Vladimir State University, Vladimir 600026, Russia). Journal of Analytical Chemistry, (Translation of Zhurnal Analiticheskoi Khimii), 55(5), 480-485 (English) 2000 MAIK Nauka/Interperiodica Publishing. CODEN: JACTE2. ISSN: 1061-9348. DOCUMENT TYPE: Journal CA Section: 61 (Water) Section cross-reference(s): 79

Test systems were proposed for the detn. of total hardness, acidity, alky., pH, total concn. of heavy metals, and active chlorine in natural, industrial, and potable water by the length of the colored zone and color intensity of indicator papers or the test liq. after placing reactive papers in it. The ranges of the parameters to be detd. were as follows: 0.001-30mM for total hardness, 0-5mM for total acidity, 0-30mM for total alky.,  $5 \times 10^{-8}$ - $5 \times 10^{-4}$ M for the total concns. of heavy metals, and 0.3-500 mg/L for active chlorine. The time of anal. was 10-15 min; the relative std. deviation of the results of anal. was no higher than 30%.

Keywords

indicator paper water quality detn

Index Entries

Alkalinity

Heavy metals

detn. of; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

Drinking waters

Waters

indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

Paper

indicator; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

\*7782-50-5, analysis

active, detn. of; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

60-10-6

76-59-5

76-61-9

85-85-8

115-39-9

119-93-7

143-74-8

1058-92-0

1787-61-7

2538-85-4

7681-11-0, uses

9005-25-8, uses

anal. reagent; indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

7732-18-5, analysis

indicator papers for detn. of overall quality characteristics of natural, industrial, and potable waters

Search Strategy  
(CAN)(112:68787)

112:68787

Indicators for estimation of hardness in brine used in membrane-type chlor-alkali cells.

Venkataraman, K.; Rajan, T. Sushil Kumar; Gurumoorthy, K. (Mettur Chem. Ind. Corp. Ltd., Mettur Dam 636 402, India). Indian J. Technol., 26(11), 565-6 (English) 1988. CODEN: IJOTA8. ISSN: 0019-5669. DOCUMENT TYPE: Journal CA Section: 79 (Inorganic Analytical Chemistry)

Three indicators are suggested for use in the quality control of chem. purified brine and ion-exchange treated brine used in membrane-type electrolyzers. The methods are simple enough to be adopted on a routine basis and the results reliable. The detection limits of the three indicators were detd. Calmagite and Patton and Reeder's indicator are suitable for quality control of chem. purified brine. Acid Aliyarin Black can be used for quality control of brine after ion-exchange treatment.

Keywords

brine analysis hardness metallochromic indicator  
hardness detn brine metallochromic indicator  
calmagite indicator hardness detn brine  
Patton Reeder indicator hardness detn brine  
acid Aliyarin Black indicator hardness detn

Index Entries

\* Brines

hardness detn. in, for membrane chlor-alkali cells, metallochromic indicators  
for

Electrolytic cells

diaphragm, chlor-alkali, metallochromic indicators for hardness detn. in brine  
for

Indicators

metallochromic, for hardness detn. in brine in membrane chlor-alkali cells

7439-95-4, analysis

7440-70-2, analysis

detn. of, in brine in membrane chlor-alkali cells, metallochromic indicators for

3147-14-6

3258-74-0

3737-95-9

metallochromic indicator, in detn. of hardness in brine in membrane  
chlor-alkali cells

Search Strategy  
(CAN)(123:92743)

123:92743

Colorimetric method and instrument for rapidly measuring hardness of boiler water.

Zhang, Ji; Chen, Jinsheng (Tianjin Boiler Pressure Container Institute, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1087723 A 8 Jun 1994, 11 pp. (People's Republic of China). CODEN: CNXXEV. CLASS: ICM: G01N031-22. ICS: G01N021-77. APPLICATION: CN 93-105857 27 May 1993. DOCUMENT TYPE: Patent CA Section: 61 (Water)

The hardness is measured by using a coloring agent and a std. color scale by preheating a colorimetric light source, injecting a water sample (usually 5 mL) into a sealed coloring agent container and turning the container several time for mixing, pouring the mixt. in a colorimetric cup and setting the cup at an appropriate position with respect to the light source, and detg. the hardness by comparing with the std. color scale. The coloring agent consists 30-80% of a pH buffer soln. (sodium tetraborate,  $\text{NaH}_2\text{PO}_4$ ,  $\text{Na}_2\text{HPO}_4$ , and Tris) and 20-70% metal ion indicator (Chrome blue black, Chrome blue K, or Calmagite), and the std. color scale is prepd. from mixts. contg. 10-90% Co salt and 10-90% Cu salt equal to 0.00, 0.01, 0.02, 0.03, 0.04, 0.05 mequiv/L. The instrument includes a colorimetric light source lamp, lamp box, std. color bottle and colorimetric cup.

\* Keywords

colorimetric boiler water hardness detn

Index Entries

Colorimetry

colorimetric method and instrument for rapidly measuring hardness of boiler water

77-86-1

1330-43-4

2538-85-4

3147-14-6

3270-25-5

7558-79-4

7558-80-7

\* buffer soln. for colorimetric detn. of hardness of boiler water

7732-18-5, analysis

7439-95-4, analysis

7440-70-2, analysis

colorimetric method and instrument for rapidly measuring hardness of boiler water

7440-48-4, compds., slats

7440-50-8, compds., slats

std. color solns. for colorimetric detn. of hardness of boiler water